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On the variational principle for fractional kinetic theory

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Abstract

© Published under licence by IOP Publishing Ltd. In a recent paper (Abe S 2013 Phys. Rev. E 88 022142), a variational principle has been formulated for spatiotemporally-fractional Fokker-Planck equations and applied to derivations of their approximate analytic solutions based on the Lévy Ansatz. Here, the problem of the constraint associated with normalization condition on a probability distribution behind the principle is discussed. It is shown that the action functional possesses a specific transformation property in terms of an auxiliary field and the constraint turns out to have already been imposed implicitly in terms of such a structure.

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